

Briefing Package

**Corrositex®: Commission Policy on
Accepting Alternatives to Animal Testing**

For Information:

**Jacqueline Ferrante
Office of Compliance
301-504-0477 x 1199**

Table of Contents

PAGE

Executive Summary

Briefing Memorandum

 Introduction

 Discussion

 Recommendation

TABS

Tab A Memorandum from Marilyn Wind, Ph.D., HS, to Michael Gidding,
 Compliance Legal Division, "Corrositex," March 22, 2000

Tab B Draft Federal Register Notice, "Policy on Accepting Alternatives to
 Animal Testing," June , 2000

Executive Summary

The Commission requires precautionary labeling under the Federal Hazardous Substances Act (FHSA) to warn consumers of the potential hazards associated with household substances. Information to define the hazards is collected from prior experience (either human or animal data) and animal testing when reliable alternative data are unavailable. Usually, Commission policy supports limiting animal tests to include the lowest number of animals.

Testing methods that assess the hazard potential of chemicals without using animals are called *in vitro* methods. Corrositex® is a new *in vitro* test method that measures the potential of chemicals to cause skin corrosion. Recently, the Interagency Coordinating Committee for the Validation of Alternative Methods (ICCVAM) organized a peer review panel to evaluate Corrositex®. The panel concluded that Corrositex® is useful when testing the corrosive potential of acids, bases, and acid derivatives, but it may only be used as part of a tiered assessment strategy for other chemical classes. In the latter case, negative responses must be verified by performing dermal irritation testing. Positive responses require no further testing unless there is a concern about "false positive" results.

Commission staff reviewed Corrositex® data and does not agree that it is an adequate stand-alone method for ensuring the accurate labeling of hazardous substances because: 1) in some chemical classes an insufficient number of chemicals were tested; and/or 2) the sensitivity of the test is not high enough to support using Corrositex® as a stand-alone test without requiring additional animal testing for negative responses. However, the staff considers Corrositex® a good first step in a tiered approach for all chemical classes that are compatible with the assay detection system. For those chemicals or chemical mixtures that are compatible with the assay, a positive result is sufficient evidence that the product is corrosive. Animal testing or other evaluation would still be needed for chemicals producing a negative result (to confirm the negative result) and for those chemicals that are incompatible with the assay.

The staff recommends that the Commission issue a Federal Register notice stating that the Corrositex® method can substitute for animal testing when chemicals produce a positive result. Chemicals that are incompatible with the assay and those producing a negative result would require further evaluation. Since the Commission has no practical experience in evaluating product hazards using the Corrositex® method, the staff suggests accepting it as an alternative method for three years from the date of publication in the Federal Register. The acceptance will become permanent if the staff determines that no significant problems developed with its use.



**UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C. 20207**

To: The Commission
Todd Stevenson, Acting Secretary

Through: Michael S. Solender, General Counsel
Through: Thomas W. Murr, Jr., Acting Executive Director
Through: Alan H. Schoem, Director, Office of Compliance
Through: Ron Medford, Assistant Executive Director for Hazard Identification
And Reduction

From: Jacqueline Ferrante, Ph.D., Office of Compliance
Marilyn Wind, Ph.D., Deputy Associate Executive Director for Health
Sciences

Subject: Policy on Accepting Alternatives to Animal Testing

Introduction

Under the Federal Hazardous Substances Act (FHSA), 15 U.S.C. §1261-1275, the Commission requires precautionary labeling for hazardous household substances. The purpose of precautionary labeling is to alert consumers to the potential hazards from household products. To define the hazards, animal testing may be necessary in the absence of reliable alternative data. However, the Commission prefers to avoid animal testing when other alternatives are available.

Recently, the Interagency Coordinating Committee for the Validation of Alternative Methods (ICCVAM) organized a peer review panel to evaluate Corrositex® as an alternative *in vitro* test method for assessing the potential of chemicals to cause skin corrosion. *In vitro* testing does not involve the use of animals. Commission staff reviewed the recommendations of the panel to determine if Corrositex® is a valid alternative to animal testing. This memorandum presents the staff's evaluation of Corrositex®.

Discussion

The hazards addressed under the FHSA include toxicity, corrosivity, flammability, skin and eye irritancy, sensitization, and the generation of pressure by

decomposition, heat, or other means. Appropriate precautionary labeling for a product is developed using objective criteria to determine whether it is hazardous. While there are standard test methods for flammability, testing for toxicity (oral, dermal, ocular, and inhalation) in living systems is more complex. Animal testing is typically used for hazard determinations when no other data are available from human experience or prior animal testing. However, manufacturers are not required to conduct animal testing under the statute and its implementing regulations.

ICCVAM is an interagency committee¹ that sponsors scientific review of alternative tests that may refine, replace or reduce the use of animals in tests in evaluating potential product hazards. These reviews can provide a basis for regulatory agencies to accept such alternative tests in making safety and regulatory decisions. ICCVAM requires companies to submit test results for a broad range of chemicals using the alternative procedure and to compare these results with data from the test it would replace.

Corrositex® is an *in vitro* or non-animal test method for evaluating skin corrosion (TAB A). The test is based on the ability of a corrosive chemical or chemical mixture to pass through, by diffusion and/or destruction/erosion, a biobarrier and to elicit a color change in the underlying liquid Chemical Detection System (CDS). Chemicals are prescreened for compatibility with the assay by direct application to the CDS. If there is no color change, then the chemical or chemical mixture is considered incompatible and cannot be tested using this assay.

An ICCVAM Peer Review Panel reviewed the data on Corrositex® and concluded that it "is useful as a stand-alone assay for evaluating the corrosivity or noncorrosivity of acids, bases, and acid derivatives." For other chemical and product classes, it concluded that "Corrositex® may be used as part of a tiered assessment strategy. In the latter approach, negative responses (no color change = not corrosive) must be followed by dermal irritation testing, and positive responses (color change = corrosive) require no further testing unless the investigator is concerned about potential false positive responses.

While the Peer Review Panel recommended that Corrositex® could serve as a stand-alone assay for acids, bases and acid derivatives, Health Science's staff does not agree that this method is adequate for ensuring the accurate labeling of hazardous substances for several reasons. First, the tests lacked a sufficient number of chemicals in some of the chemical classes. Secondly, the sensitivity (i.e., the proportion of all positive chemicals or chemical mixtures that are correctly classified as positive in the test) is not high enough to support using Corrositex® as a stand-alone test without requiring additional animal testing for negative responses.

¹ ICCVAM consists of 14 regulatory and research agencies.

The staff considers Corrositex® a good first step in a tiered approach for all compatible chemical classes. For those chemicals or chemical mixtures that are compatible with the assay, a positive result is sufficient evidence that the product is corrosive. Animal testing or other evaluation would still be needed for chemicals producing a negative result (to confirm the negative result) and for those chemicals that are incompatible with the assay.

The following table summarizes the sensitivity², specificity³, and accuracy⁴ of Corrositex® by chemical or product class.

<u>Chemical/Product Class</u>	<u>Sensitivity</u>	<u>Specificity</u>	<u>Accuracy</u>
Overall	85% (76/89)	70% (52/74)	79% (128/163)
Inorganic/organic acids & acid mixtures	79%(22/28)	63% (5/8)	75% (27/36)
Acid Derivatives	100% (7/7)	86% (6/7)	93% (13/14)
Amines	84% (16/19)	67%(4/6)	80% (20/25)
Inorganic/organic bases & base mixtures	89% (25/28)	57% (4/7)	83% (29/35)
Organic & inorganic acids & bases	86% (54/63)	68% (15/22)	81% (69/85)
Cleaners & detergents	90% (9/10)	29% (4/14)	54% (13/24)
Undefined industrial Chemicals	87% (13/15)	62% (8/13)	75% (21/28)
Surfactants	*	100% (22/22)	100% (22/22)

* No corrosive surfactants were tested

² Sensitivity is defined as the proportion of all positive chemicals or chemical mixtures that are correctly classified as positive in a test.

³ Specificity is defined as the proportion of all negative chemicals or chemical mixtures that are correctly classified as negative in a test.

⁴ Accuracy (concordance) is defined as the proportion of correct outcomes of a method.

Recommendation

The staff recommends that the Commission issue a Federal Register notice stating that the Corrositex® method can substitute for animal testing when chemicals produce a positive result. Chemicals that are incompatible with the liquid detection system and those producing a negative result would require further evaluation.

There is a possibility for false positive results with some products, i.e., a chemical tests positive, but is not corrosive. However, requiring labeling for these "false positive" products would not compromise consumer safety. If an exposure occurs with a product that is not corrosive but is labeled as such, typical first aid measures on the labels of corrosive products would not place the person at risk. Moreover, use of the Corrositex® test is voluntary. A manufacturer whose product tests positive may conduct additional tests to confirm or refute the result. Data from animal testing or human experience takes precedence over data from *in vitro* methods.

Since the Commission has no practical experience using the Corrositex® method to evaluate corrosivity, the staff suggests accepting it as an alternative method for three years from the date of publication in the Federal Register. If the staff determines that there were no significant problems after this time, the acceptance will become permanent. A draft FR notice is at Tab B.

TAB A



UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, DC 20207

Memorandum

Date: March 22, 2000

TO : Michael Gidding, Compliance Legal Division

THROUGH: Mary Ann Danello, Ph.D., Associate Executive Director for Health Sciences *maD*

FROM : Marilyn L. Wind, Ph.D., Deputy Associate Executive Director for Health Sciences *mlw*

SUBJECT : Corrositex

Background

Corrositex® is an *in vitro* alternative test method for assessing the potential of chemicals to cause skin corrosion. The Interagency Coordinating Committee for the Validation of Alternative Methods (ICCVAM), an interagency committee consisting of 14 regulatory and research agencies and programs, coordinates issues within the Federal government that relate to the development, validation, acceptance and national/international harmonization of toxicological test methods. ICCVAM coordinated the review of Corrositex® and assembled a Peer Review Panel to determine if this test method had been validated and what the parameters of the validation were.

Corrositex® is an *in vitro* method that is based upon the ability of a corrosive chemical or chemical mixture to pass through, by diffusion and/or destruction/erosion, a biobarrier and to elicit a color change in the underlying liquid Chemical Detection System (CDS). Chemicals are prescreened for compatibility with the assay by directly applying the test chemical or chemical mixture to the CDS. If a color change is not induced, then the test chemical or chemical mixture does not qualify for testing with this assay.

The Peer Review Panel concluded that Corrositex® "is useful as a stand-alone assay for evaluating the corrosivity or noncorrosivity of acids, bases, and acid derivatives." For other chemical and product classes, they concluded that "Corrositex® may be used as part of a tiered assessment strategy. In this approach, negative responses must be followed by dermal irritation testing, and positive responses require no further testing unless the investigator is concerned about potential false positive responses."

Discussion

The sensitivity¹, specificity², and accuracy³ of Corrositex® by chemical or product class are summarized in the following table.

Chemical/Product Class	Sensitivity	Specificity	Accuracy
Overall	85% (76/89)	70% (52/74)	79% (128/163)
Inorganic and organic acids plus acid mixtures	79% (22/28)	63% (5/8)	75% (27/36)
Acid Derivatives	100% (7/7)	86% (6/7)	93% (13/14)
Amines	84% (16/19)	67% (4/6)	80% (20/25)
Inorganic and organic bases and base mixtures	89% (25/28)	57% (4/7)	83% (29/35)
Organic and inorganic acids and bases	86% (54/63)	68% (15/22)	81% (69/85)
Cleaners and detergents	90% (9/10)	29% (4/14)	54% (13/24)
Undefined industrial chemicals	87% (13/15)	62% (8/13)	75% (21/28)
Surfactants	*	100% (22/22)	100% (22/22)

*No corrosive surfactants were tested.

While the Peer Review Panel recommended that Corrositex® could serve as a stand alone assay for acids, bases and acid derivatives, staff does not believe that this is adequate for the purposes of insuring the accurate labeling of consumer products. Staff believes that for some of these chemical classes an insufficient number of chemicals have been tested and/or the sensitivity is not high enough to justify using this as a stand alone test and not requiring additional animal testing for the negative responses. Staff considers Corrositex® a good first step in a tiered approach for all compatible chemical classes. For those chemicals or chemical mixtures that are compatible with the assay, a positive result should be considered sufficient. For those chemicals that produce a negative result, animal testing would be necessary to confirm the negative result. For those chemicals or chemical mixtures that are not compatible with this assay, animal testing would still be necessary.

Recommendation

Staff recommends that the Commission issue a Federal Register notice indicating that it would accept corrosivity labeling based upon a positive result in the Corrositex® assay. It should further state that for those chemicals or chemical mixtures that are compatible with the assay that yield a negative result, animal testing would be necessary to confirm the negative result before a decision not to label is made. Those chemicals or chemical mixtures that are not compatible with the Corrositex® assay would have to be tested in animals to determine if they require corrosivity labeling.

¹ Sensitivity is defined as the proportion of all positive chemicals or chemical mixtures that are correctly classified as positive in a test.

² Specificity is defined as the proportion of all negative chemicals or chemical mixtures that are correctly classified as negative in a test.

³ Accuracy (concordance) is defined as the proportion of correct outcomes of a method.

TAB B

CONSUMER PRODUCT SAFETY COMMISSION

Policy on Accepting Alternatives to Animal Testing

AGENCY: Consumer Product Safety Commission.

ACTION: Notice.

SUMMARY: The Commission publishes a statement of its policy concerning the use of certain alternative tests in lieu of animal tests to evaluate the toxicity, corrosivity, and potential to cause irritation associated with hazardous substances. The purpose of the policy is to reduce the need to test animals to determine hazards associated with household products subject to the Federal Hazardous Substances Act.

FOR FURTHER INFORMATION CONTACT: Marilyn Wind, Directorate for Health Sciences, Consumer Product Safety Commission, Washington, D.C. 20207, telephone (301) 504-0957.

Mary Toro, Office of Compliance, Consumer Product Safety Commission, Washington, D.C.. 20207, telephone (301)504-0608.

SUPPLEMENTARY INFORMATION: As explained below in more detail, manufacturers of products subject to the Federal Hazardous Substances Act (FHSA), 15 U.S.C. §1261-1275, and the Commission must evaluate household products to determine whether they require precautionary labeling under the act to address the hazards associated with their handling or use. While the preferred method for evaluating such hazards is to avoid animal testing where possible, such tests may be required in the absence of reliable alternative data. The Commission has previously adopted policies intended to minimize the number of animals tested and to reduce the pain associated with such tests.

In 1997, the National Institute of Environmental Health Sciences, the National Toxicology Program and thirteen federal agencies joined to support an Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM). ICCVAM sponsors scientific review of alternative tests that may refine, replace or reduce the use of animals in tests in evaluating potential product hazards. These reviews can provide a basis for regulatory agencies such as the Commission to accept such alternative tests as a basis for safety and regulatory decisions. In the case of the Commission, such alternatives, if accepted, would primarily have relevance in determining compliance with the labeling requirements of the FHSA.

Recently ICCVAM completed a study on a non-animal test, developed under the trade name Corrositex®, which could replace certain animal tests used under the FHSA to determine whether products are corrosive to skin and eyes. The purpose of this notice is to inform interested members of the public of 1) the procedure and criteria that the Commission staff will use to evaluate the suitability of ICCVAM-approved tests as substitutes or supplements to animal tests under the FHSA, and 2) the Commission staff's evaluation of the Corrositex® test as an alternative to animal tests under the FHSA.

CPSC Policy on Alternatives to Animal Testing

a. Statutory requirements. The Consumer Product Safety Commission (Commission) administers the Federal Hazardous Substances Act (FHSA) 15 U.S.C. § 1261-1275. The FHSA requires, among other things, appropriate cautionary labeling on certain household products to alert consumers to the potential hazards the products may present during customary or reasonably foreseeable use. The hazards the act addresses include toxicity, corrosivity, flammability, skin and eye irritancy, sensitization, and the generation of pressure by decomposition, heat, or other means. Determining what precautionary labeling is appropriate for a specific product requires objective criteria to determine whether the product presents any or all of these hazards. Hazards such as flammability can be identified and measured using standard test methods. However, hazards such as toxicity, corrosiveness to tissue, eye irritancy, and skin irritancy result from the biological response of living tissue and organs to the presence of a hazardous substance. Since public policy prohibits experimental testing of these types of substances on human beings, making these determinations requires the use of other means. One alternative to the inappropriate testing of hazardous substances on humans is to test animals to determine the existence of such hazards. The FHSA itself specifically recognizes the validity of this approach by defining the term "highly toxic" in terms of animal toxicity when groups of ten or more rats are exposed to specified amounts of the substance. 15 U.S.C. § 1261(h).

It is important to note, however, that, with the exception of the term "highly toxic", the FHSA defines the hazards it addresses in terms of their general effects on humans. For example, a product is "toxic" if it has the potential to produce personal injury or illness to humans through ingestion, inhalation, or absorption through any body surface. "Corrosive" means any substance which in contact with living tissue will cause destruction of tissue by chemical action, while an "irritant" refers to a substance which is not corrosive, but which will induce a local inflammatory reaction upon immediate, prolonged, or repeated contact with normal living tissue.

b. Evaluation of hazards. The Commission has issued regulations interpreting and supplementing the definitions of the hazards that the FHSA addresses. Those regulations use animal tests to evaluate those types of hazards that are the result of biological response in humans. However, the regulations do not require any firm to perform animal tests. The statute and its implementing regulations only require that a product be labeled to reflect the hazards associated with that product. Thus, the Commission policy has been, whenever possible, to evaluate product hazards by using alternatives to conducting animal testing.

Since the FHSA provides that reliable human experience data shall take precedence over differing results from animal data, the Commission staff first looks to records of prior human experience with specific products, if such records exist. Other alternative sources of information include literature which records the results of prior animal testing or limited human tests, and expert opinion. The Commission resorts to animal testing only when the other information sources have been exhausted. While animal testing may be necessary in some cases, Commission policy has traditionally supported limiting such tests to the lowest feasible number of animals and taking every feasible step

to eliminate or reduce the pain or discomfort that can be associated with such tests. The Commission has also encouraged manufacturers of products subject to the FHSA to follow similar policies.

c. Alternative tests - the role of ICCVAM. In 1993, Congress, as part of the National Institutes of Health Revitalization Act, directed the National Institutes of Environmental Health Sciences to establish an Applied Toxicological Research and Testing Program and to "(a) establish criteria for the validation and regulatory acceptance of alternative testing methods, and (b) recommend a process through which scientifically validated alternative methods can be accepted for regulatory use." The Interagency Coordinating Committee for the Validation of Alternative Methods was established in 1994 to develop criteria and processes for validation and regulatory acceptance of toxicological testing methods that would be useful to Federal agencies and the scientific community. All federal regulatory and research agencies participated in the committee. In 1995, the committee issued a draft report containing processes and criteria for validating alternative test methods; the report was subject to review at an international workshop. ICCVAM accepted comments and recommendations on the draft report and issued its final report in 1996.

Once ICCVAM issued its final report, its role changed. ICCVAM became the coordinating body for the Federal government for the review and validation of alternative test methods. As a result, an organization that wishes to promote the use of an alternative test method can take the method to ICCVAM rather than applying to each individual agency that might have regulatory requirements that relate to the alternative test. ICCVAM has the ability to convene expert panels and to draw on the resources of all the involved agencies to determine if a particular test has been validated and to what extent it has been validated. Once the process of determining if a test has been validated and setting the parameters under which the test is validated is completed, ICCVAM issues a report which is then sent to each individual agency for a decision on regulatory acceptance of the method.

d. Alternative tests - the ICCVAM process. The ICCVAM process for evaluating and accepting alternative test methods to evaluate biological responses to products is thorough. It requires that a company submitting a test method as an alternative to animal testing provide data on the results of testing a large range of chemicals using the alternative procedure. It requires that the company document how that test data compares to the data achieved by the test which the alternative test would be replacing. A center under the auspices of the National Toxicology Program reviews all of the data, does a thorough literature search, and prepares an analysis of those materials for a panel of outside experts to review. The experts review the data, the analysis, the proposed test method and the method it is replacing, and determine how accurate the proposed method is in determining positives and negatives. They may indicate the method is valid for certain classes of chemicals, but not for others. The expert panel then prepares a report that documents its findings. ICCVAM reviews the report and, if it agrees with the conclusions of the expert panel, accepts the report and makes it available to individual agencies for a decision on regulatory acceptance of the method.

e. Commission staff review of ICCVAM alternative test methods - The staff of the Commission's Directorate for Health Sciences is routinely involved in

ICCVAM evaluations of alternative test methods. The staff provides data on the Commission's experience with certain tests and chemicals, where such data is available, consults with ICCVAM during the preparation of material for review by the expert panel, and also participates in reviewing the panel's recommendations. Once ICCVAM forwards an alternative procedure to the Commission, the staff reviews it in light of the requirements of the FHSA to determine whether it provides a reliable alternative or adjunct to the animal tests.

The staff reviews data generated using the alternative procedure to determine whether it is consistent with test data or other information that has formed the basis for prior Commission labeling recommendations. It also examines limitations associated with the use of the alternative procedure. The staff notes whether there are false negatives and/or false positives and for what chemical classes the expert panel considered the alternative procedure validated. Based upon its review of the expert panel report and knowledge of the requirements of the FHSA, the Directorate for Health Sciences makes a recommendation to accept or reject this alternative test method, identifying any limitations on its use (e.g. the chemical classes for which it is a valid test method).

f. Commission policy on the acceptance of alternative test methods - The Commission believes that the processes described above provide a scientifically valid basis for establishing alternative tests for evaluating biological responses to products. However, the Commission also recognizes that each alternative test must be evaluated in light of the statutory requirements of the FHSA and past precedent under that act. Accordingly, the Commission will review ICCVAM-sponsored alternative tests on a case-by-case basis to determine their suitability as reliable alternatives to the animal tests currently identified in the regulations under the FHSA. If the Commission accepts an alternative test, it will publish notice of the acceptance in the FEDERAL REGISTER, noting also any limitations associated with the acceptance. However, even if the Commission accepts an alternative test method, if, for a specific product, data from animal tests or data on human experience indicate results different from those generated by the alternative method, the animal test or human experience data shall take precedence in determining what labeling, if any, is required under the FHSA.

g. Corrositex®. Corrositex® is an *in vitro* alternative test method for assessing the potential of chemicals to cause skin corrosion. ICCVAM coordinated the review of Corrositex® and assembled a Peer Review Panel to determine if this test method had been validated and what the parameters of the validation were.

The Corrositex® method for evaluating corrosivity is based upon the ability of a corrosive chemical or chemical mixture to pass through, by diffusion and/or destruction/erosion, a biobarrier and to elicit a color change in the underlying liquid Chemical Detection System (CDS). Chemicals are prescreened for compatibility with the assay by directly applying the test chemical or chemical mixture to the CDS. If a color change is not induced, then the test chemical or chemical mixture does not qualify for testing with this assay.

The Peer Review Panel concluded that Corrositex® "is useful as a stand-alone assay for evaluating the corrosivity or noncorrosivity of acids, bases, and acid derivatives." For other chemical and product classes, it concluded that "Corrositex® may be used as part of a tiered assessment strategy. In the latter approach, negative responses must be followed by dermal irritation testing, and positive responses require no further testing unless the investigator is concerned about potential false positive responses."

The sensitivity¹, specificity², and accuracy³ of Corrositex® by chemical or product class are summarized in the following table.

Chemical/Product Class	Sensitivity	Specificity	Accuracy
Overall	85% (76/89)	70% (52/74)	79% (128/163)
Inorganic and organic acids plus acid mixtures	79% (22/28)	63% (5/8)	75% (27/36)
Acid Derivatives	100% (7/7)	86% (6/7)	93% (13/14)
Amines	84% (16/19)	67% (4/6)	80% (20/25)
Inorganic and organic bases and base mixtures	89% (25/28)	57% (4/7)	83% (29/35)
Organic and inorganic acids and bases	86% (54/63)	68% (15/22)	81% (69/85)
Cleaners and detergents	90% (9/10)	29% (4/14)	54% (13/24)
Undefined industrial chemicals	87% (13/15)	62% (8/13)	75% (21/28)
Surfactants	*	100% (22/22)	100% (22/22)

*No corrosive surfactants were tested.

Sensitivity is defined as the proportion of all chemicals or chemical mixtures known to produce positive results that were correctly classified as positive.

Specificity is defined as the proportion of all chemicals or chemical mixtures known to produce negative results that were correctly classified as negative.

Accuracy (concordance) is defined as the proportion of tests that resulted in a correct outcome.

While the Peer Review Panel recommended that Corrositex® could serve as a stand-alone assay for acids, bases and acid derivatives, the Commission does not agree that such an approach would be adequate for the purposes of ensuring the accurate labeling of hazardous substances. An insufficient number of chemicals in some of these chemical classes have been tested. Furthermore, the sensitivity of some of the tests performed on these classes is not high enough to support using Corrositex® as a stand-alone test without requiring additional animal testing for negative responses. The Commission considers Corrositex® a good first step in a tiered approach for all compatible chemical classes, that is, chemicals which cause a color change in the chemical detection system. For those chemicals or chemical mixtures that are

¹ Sensitivity is defined as the proportion of all positive chemicals or chemical mixtures that are correctly classified as positive in a test.

² Specificity is defined as the proportion of all negative chemicals or chemical mixtures that are correctly classified as negative in a test.

³ Accuracy (concordance) is defined as the proportion of correct outcomes of a method.

compatible with the assay, a positive result should be considered sufficient to classify those products as corrosive. For those chemicals that produce a negative result, animal testing or other evaluation would be necessary to confirm the negative result. For chemicals or chemical mixtures that are not compatible with this assay, animal testing or other evaluation would still be necessary.

The Commission recognizes that use of the Corrositex® method could result in a few products being labeled unnecessarily because those products could produce positive test results even though those products are not in fact corrosive. However, the Commission does not believe that such over-labeling will have adverse consequences on consumer safety. In the event someone ingests or experiences skin or eye contact with a product that is not corrosive but is labeled as such, typical immediate first aid measures prescribed on the labels of corrosive products would not place the person at risk. Moreover, use of the Corrositex® test is voluntary. A manufacturer whose product tests positive is free to conduct additional tests or evaluations to confirm or refute that result. As is stated earlier, data from animal testing or human experience takes precedence if that data conflict with the results of testing under the Corrositex® method.

In view of the foregoing, the Commission accepts the Corrositex® assay, subject to the limitations described below, as an alternative to animal testing for evaluating the corrosivity of acids, bases and acid derivatives that may require labeling under the FHSA. A firm that elects to use this method to evaluate chemicals or chemical mixtures that are compatible with the assay must label any substance that tests positive as corrosive, unless the firm has data on animal testing or human experience that leads to a different conclusion. Those chemicals or chemical mixtures that are compatible with the assay and that yield a negative test result require animal testing or other evaluation to confirm the negative result before a decision not to label is made. Those chemicals or chemical mixtures that are not compatible with the Corrositex® assay require alternative evaluation to determine if they require corrosivity labeling. These evaluations may include testing animals, reviewing records of prior human experience with specific products, if such records exist, and literature which records the results of prior animal testing or limited human tests, and soliciting expert opinion.

Although the Commission is accepting Corrositex® as an alternative method of evaluating corrosivity, it recognizes that it has little experience generally in the practical application of alternative test methods for assessing hazards regulated under the FHSA. Accordingly, the Commission accepts Corrositex on an interim basis. If, after three years from the date of publication of this notice, the Commission experiences no significant negative affects associated with this acceptance, the acceptance will become permanent.

Dated:-
Todd Stevenson
Acting Secretary,
Consumer Product Safety Commission

